College Quarterly
Summer 2012 - Volume 15 Number 3

Entering new territory: Crossing over to fully synchronous, e-learning courses

Lorayne Robertson and Wendy Hardman

Abstract

A training module of six sessions was designed for professors in higher education who were transitioning to teaching synchronous, e-learning courses from formerly teaching in either asynchronous courses or in face-to-face courses. Since the participants were experienced educators, the boundary of their expertise to be extended was moving to the fully synchronous e-learning setting. All of the professors were already familiar with their institution's asynchronous learning management system and some were familiar with asynchronous courses with synchronous elements. This research follows the professors through the transition to fully synchronous classes, documenting the challenges and lessons learned in this journey through observations of the training, individual interviews and one focus group. One year after teaching their first synchronous, e-learning course(s), their reflections on the training provide some insights into the kinds of changes the professors experienced as they extended the boundaries of their teaching and learning environments and entered new territory. One finding of the study is that more explicit discussion of theoretical underpinnings of e-learning, such as technology abilities, affordances and constraints, and transformative-pedagogies, might have helped the professors navigate this transition more easily.

Introduction

The introduction of the internet has provided educators at all levels, including post-secondary professors, a range of innovative and potentially empowering tools for teaching, learning, course management, and assessment. It has prompted significant changes in teaching and learning approaches through its affordances such as the growth of content it provides, and also new technologies that promote and support communication and interaction between and among the students, the content, and the instructors (Anderson, 2008). According to McGreal and Anderson (2007) university students in Canada are advocating for more flexibility in course offerings through e-learning to accommodate their working lives. Interest and enrolment in online courses continues to expand at a rapid pace; the online university in the UK, for example had 250, 000 students registered in 2008-2009 (Macdonald & Poniatowska, 2011). These numbers continue to grow. According to Pannekoek (2011), post-secondary education needs to prepare to build programs for millions of emerging open learning students as it is anticipated that approximately 150 million more online learning spots will be needed in the next decade.

This rapidly shifting context for course delivery is enabled by almost ubiquitous access to the Internet in developed countries (Anderson, 2008). The changing context places continuous demands on professors to remain

current and to consider new sub-disciplines such as education informatics (Collins & Weiner, 2010) which “incorporates new technologies and learning strategies to enhance the capture, organization, and utilization of information within the field of education” (p. 2525). It has also prompted new paradigms of student-led, collaborative pedagogies (Bruns, Cobcroft, Smith & Towers, 2007).

A 2009 American study has reported, however, that fewer than half of the tertiary students surveyed felt that most of their instructors were using information technology effectively (Smith, Salaway & Borreson Caruso, 2009; cited in MacDonald & Poniatowska, 2011). How professors make the transitions to new technologies and new models of teaching and learning is an important area of study in the present context.

The study described here follows a cohort of professors who were transitioning from either on-campus classrooms or asynchronous, e-learning classrooms, to fully synchronous, e-learning classroom settings. The study follows them through the training and course design period and then listens to them again one year later to record, in retrospect, both their reflections about the training and also their impressions about their new teaching experiences in fully synchronous e-classrooms. This study provides an expanded understanding of the nature of the teaching and learning transitions of the professors based on these retrospective interviews.

Context

Computer-mediated communication innovations have prompted a range of e-learning options that are now available to post-secondary programs. For example, online classes may be asynchronous; near-synchronous (asynchronous with responses required in a tight time frame) (MacDonald &Poniatowska, 2011); asynchronous with synchronous elements; or fully synchronous. According to Hrastinski, Keller & Carlsson (2010), much of the research to date has focused on asynchronous communication, with many studies finding that one of the strengths of this delivery mode is that it provides time for reflection and for the discussion of complex ideas. There has not been the same level of research on synchronous, e-learning; the research has been “sparse” and the results have been “inconclusive”, according to Hrastinski et al. (2010, p. 652). They find also that there are few guidelines available for educators who want to use synchronous media.

Similarly, Wallace (2007) finds that there has been a gap in policy development to aid professors with establishing best practices for the transition to online teaching. She references a model of institutional support for the development of policy transitions to online teaching which is a continuum of three levels. A very loosely-supervised transition to online is classified as “anarchic”; a middle of the road approach is termed “negotiated development” and a more closely-supervised approach is termed “controlled development” (Pospisil & Wilcolcoxin, 1998; cited in Wallace, 2007, p. 89). Using this theoretical scale, the transition asked of the professors in this study would likely be characterized as *negotiated development* because only selected programs within certain faculties at the university chose to make the transition to fully synchronous programs, not the entire university. The transition was supported, but not required, by the

teaching and learning centre at the university.

In this study, six professors teaching in two faculties and two programs were scheduled to move to the fully synchronous, e-learning environment. A training program of six weekly sessions was designed to introduce faculty to the synchronous environment, to give them time to explore the various tools, and to experience how other professors were already teaching in this setting. From previous experiences with others making this transition, the university teaching and learning training group had found that the e-change involved more than learning some new technology affordances or working in a new context. The transition needed to involve immersion in a new model of technology-supported pedagogy that could potentially transform (Cranton & King, 2003) their roles as both learners and teachers. The professors were encouraged to engage in “critically reflective practice” (Cranton & King, 2003, p. 36) and to examine new possibilities and new ways of teaching that were different from previous teaching models and contexts.

The online courses in which the professors would be teaching had both asynchronous and synchronous elements. The asynchronous elements included Wikis, blogs, discussion fora, and a course content management system that included assignment submission and online grading. The online classroom sessions they were preparing to teach would occur in three-hour sessions in a fully synchronous environment where the students and the instructor had hosting rights. The learning environment included: video, chat, interactive whiteboards, polls, breakout rooms for small group discussions, and the option to record each session. This form of online pedagogy levels out the traditional professor-student dynamic of the lecture. It allows for continuous student input, interaction, contribution, and shared ownership of the screen through video, chat, shared authoring, and screen sharing.

This was new territory for the professors since their previous teaching experiences were with teaching asynchronous, e-learning courses or teaching face-to-face on campus in seminar or lecture settings. Some had never taught online; some had taught online and asynchronously; and one was familiar with courses that combined synchronous and asynchronous elements. At a minimum, all would be moving to the same software program (Adobe Connect) for the fully synchronous, e-learning environment. Potentially, they would also be making teaching and learning transitions and investigating new ways of interacting with students. Their students would be accessing these courses from various cities, provinces and countries.

The authors of this study designed the training as a series of sessions where new tools would be introduced. All attendees would be invited to use the new tools and one or two participants would be invited to share a teaching technique. This approach was developed to support the professors in their move to new teaching territory. The professors all consented to having the training sessions recorded for research purposes. The training was conducted in the target synchronous e-learning environment. One year later, after all professors had taught at least one course in the new environment, they participated in a group debriefing session, followed by individual interviews conducted by a researcher from

outside their faculty. The debriefing sessions were designed to help the professors reflect on all the elements of their transitions to the new online setting. Data include the transcripts of the six original training sessions, the post-training debrief (focus group), and the individual interviews held after the courses were delivered. Qualitative data analysis strategies were used to identify key themes and concepts that emerged from the data (Lichtman, 2012) and this analysis has provided both some insights into the professors' transition experiences and some areas for future inquiry.

Review of the literature

Designers of professional development courses for educators moving to e-learning environments must consider multiple factors: the previous experiences of the participants; the most interesting and engaging ways to present the technology tools; the modeling of teaching methods that utilize the technology; and the needs of the participants relative to the transitions that they are undertaking, to name a few. With transitions involving technology, designers need to consider not only the affordances of the new tools, but also that these tools can change the ways that people interact and work, and that educators need to be persuaded that these innovative tools have educational value (Macdonald & Poniatowska, 2011). These transitions also take time and, as Wingard (2004) reminds us, faculty need time to uncover the pedagogical benefits and new instructional strategies that can be enabled through e-learning. In her study, Wingard found that "most faculty began to use the web for pragmatic rather than pedagogical reasons" but that this picture changed with time (2004, p. 34). Participants in professional development for technology-enhanced learning have multiple needs such as time to practice in the new environment, as well as an understanding of the value of the technology affordances. It follows that they will need to have these needs met while they attempt to use the new learning and teaching tools and consider their adoption for teaching and learning.

Two frameworks that theorize technology transitions were investigated and applied to interpret the journey that the professor participants undertook when moving into synchronous, e-learning territory. One is a framework of technology affordances, abilities and constraints (Borko, Whitcomb& Liston, 2009; Kennewell, 2006); and a second is a consideration of how the transition to new online territory moves professors and students toward new models of pedagogy (Anderson, 2008; Bruns et al., 2007) and technology-supported adult learning approaches that are transformative in nature (Cranton & King, 2003; Hughes, 2005; Keegan, 2011; King, 2002; Mezirow, 1997).

Affordances

When professors transition to synchronous, online teaching, they inhabit new territory - a teaching environment where multiple events are happening simultaneously. In the synchronous, e-learning environment that is the subject of this study, for example, the classes were live three-hour meetings with video, chat, shared whiteboards, and screen-sharing. Students and professors accessed the virtual classroom in real time with shared hosting rights which, on screen, enabled the sharing, to some degree, of the flow of information. In addition, the possibility that the students were more adept with the technology than their professors was a

factor in the classroom environment with which some professors might be more comfortable than others (Bruns et al., 2007). The online environment therefore provided both affordances and constraints that held some potential to change the traditional learning environment. Borko, Whitcomb and Liston (2009) argue that technology provides tools that allow us to "control and adapt to our environment" (p.4). While technologies have affordances and constraints, the context for the use of the technology can also impact whether it is employed as an affordance or a constraint (Koehler & Mishra, 2008 cited in Borko, et al., 2009, p.4).

According to Borko and colleagues (2009), an example of an affordance would be a newer online learning environment that allows for participation in real time and workspaces that are shared for virtual collaboration. The challenge for educators is to "keep up with the changing opportunities and demands created by new technologies" (p.4). This technology allows participants and teacher to be in the virtual classroom at the same time (affordance), but this creates some pressure to rely on multiple technologies to work well in order for the class to run optimally (constraint).Another technology affordance is the ease of access to information when students and professors are online together, participating in real-time, and sharing for purposes of collaboration and discussion. The real-time presence however, also creates additional pressure (constraint) for the professors to make certain that all students are able to access and participate in the class despite variations in, for example, bandwidths at the user end (Borko et al., 2009).

An example of the significance of this context is the screen hosting rights. If the practice is to grant hosting rights to students, they can manipulate the layout of the screen as well as decide when to speak, share files, work interactively on a whiteboard, chat, conduct polls, give presentations, and promote others to host status. This can be seen as both an affordance and a constraint. As an affordance, it utilizes the advanced skills of some students to support others in the course. It is also a constraint because students and professors who are not familiar with the synchronous classroom can derail class activities with an inadvertent click that can erase, close, or lose shared online work. A presentation that is on-screen can suddenly disappear if a student with hosting rights hides or closes a window; they can even inadvertently end the session.

Kennewell (2006) argues that information and communication technologies (ICT) change relationships in the learning environment so significantly that they should be considered in the analysis of learning outcomes. He proposes that, optimally, students use their existing abilities combined with the "supporting features" (p. 105) of the learning environment in order to achieve the outcomes of the course. He employs a framework of abilities, affordances, and constraints to evaluate ICT's impact on teaching and learning. He defines affordances as, "the attributes of a setting which provide the potential for action" (p. 106) and the constraints as the structures that are put in place for the learning activity – and he sees the affordances and constraints as complementary and necessary for learning, rather than as opposites. Examining case studies, he finds that the classroom environment that applies the least constraints (structures) on the students' work with ICT is also the classroom that produces the most learning.

Applying Kennewell's (2006) framework to the synchronous, e-learning environment of this study illuminates how the theory of abilities, affordances and constraints can be considered for e-pedagogy. The technology allows for student hosting of the screen (affordance) but the professor decides on the level of student hosting rights (constraint) based on their comfort with the technology (ability). The student with hosting rights can interrupt the class accidentally (ability, affordance or constraint). Similarly, the back channel chat box allows for continuous conversation (affordance), but the policy or structures that are put in place (constraint) influence how much the chat is used for on-task or non-class related discussion. The technology allows real-time communication which moves quickly in synchronous courses (affordance), but sometimes the communication moves too quickly, especially if students have any processing challenges (ability) (Woodfine, Nunes & Wright, 2008) and the professor may need to recap or attempt to moderate the speed (ability). Students can speak without being called upon (affordance), but some students can monopolize the class time without some guidance from the professor (ability). There is an opportunity for real-time participation without having to commute to courses (affordance), but this is sometimes constrained by the instability of newer software for these synchronous events (constraint), requiring the professor to establish work-arounds (ability). The technology allows more opportunities for learning activities, for example, Wikis, real-time polls, synchronous discussions, but professors and students need the ability to use these new affordances to their conceivable potential for learning and teaching.

Transformative pedagogy

The second theoretical framework underlying this study examines transformations in teaching and learning that are supported by new technologies. Initially, transitions to technology were theorized as changes, but more recently they are characterized as transformations. More than a decade ago, Ertmer (1999) identified first- and second-order changes that occur as educators integrate technology. She found that while earlier models of technology integration focused on access to the equipment or the technical skills required for operating the computer, more recent views of technology integration require changes to teaching and learning approaches along "multiple dimensions of practice" such as the personal, the organizational, and the pedagogical (second-order changes) (1999,p.47). First-order changes included accommodating personal dimensions such as fear that the technology may not work. Second-order changes challenge teacher beliefs about teaching and learning. Ertmer envisions technology that, "emphasizes preparing students for the future that they will inherit" (1999, p.49), where technology is both a tool that enables student-centered learning and a stage on which learning activities take place.

Incorporating technology into teaching and learning can expand the boundaries of the traditional teacher/learner roles and also holds the potential to lead teachers to transform their teaching approaches. While new technologies could be used simply to replace earlier technologies and maintain the same teaching approach (e.g., the projector replaces the chalkboard for lectures), technology can also be used for more transformative purposes with adult learners (Cranton & King, 2003;

Hughes, 2005; King, 2002; Mezirow, 1997). In a technical sense, Hughes (2005) theorizes that technology-supported pedagogy can be framed in three categories: technology as *replacement* (whiteboard replaces chalkboard); as *amplification* (faster information searches); or as *transformation* (evolving roles for teachers and students). Transformational teaching in this sense would involve less teacher-talk, and more collaborative workgroups and student-led discussions which would distribute the leadership and power in the classroom through the sharing of information.

There are other calls for the redefinition of teaching and learning roles based on changing technologies. The present era has seen the introduction of knowledge generation on a global scale from individuals and groups who share common aims. Innovations such as social media, file-sharing and open source development have resulted in the redefinition of many traditional roles in multiple venues. Readers of newspapers, for example, are no longer just the consumers and responders to the news – in some cases they are also producing the news (Bruns et al., 2007). Bruns and colleagues argue that this changing global paradigm requires not only the shift from the geographic limitations of the classroom but a shift in higher education approaches to learning and teaching that is the pedagogy. In order to allow students to be as creative, collaborative, and communicative in classrooms as they are in their out-of-school lives, professors will need to adjust their teaching paradigms. As mobile technologies become more user-friendly, and student use of these devices becomes more widespread, higher education will also need to incorporate and make use of these mobile technologies in effective ways (Bruns et al., 2007).

Cranton and King (2003) suggest that professional development provides an opportunity for adults to consider how they were taught vs. how they want to teach, and undertake “critical self-reflection” on their teaching (p. 34). They propose “reflective activities” as one means to ask post-secondary educators to consider the content, the process, and the premises that have created the outcomes of their teaching (p.35). For example, a reflection on the premise, “Does it really matter that everyone did not have a good learning experience today?” holds the potential for transformation. Cranton (2010) defines transformative learning in the online environment in this way:

> Generally, transformative learning occurs when a person, group, or larger social unit encounters a perspective that is at odds with the prevailing perspective. The discrepant perspective can be ignored or it can lead to an examination of previously held beliefs, values and assumptions. When the latter is the case, the potential for transformative learning exists, though it is not called transformative until there is a deep shift in perspective and noticeable changes in action as a result of the shift (p.2).

Similarly, Keegan (2011) posits that successful online teaching and learning requires that teachers reconsider their pedagogy through a process that employs self-direction, metacognition, and collaborative learning to facilitate the change process. Macdonald and Poniatowska (2011) report on the design of professional development for staff who will be teaching online, finding that the staff need not only to build their skills

with how the new tools function, but also, they “need to understand and adopt new ways of working” (p. 120).

Although these and other theoretical foundations are beginning to build, there are few studies, at present, which guide researchers who wish to design professional development for the fully synchronous, e-learning teaching and learning environment. This study was intended to help to narrow this gap. Two of the frameworks in this literature review: technology abilities, affordances and constraints (Kennewell, 2006) and transformative learning theory (Cranton, 2010) were employed to build a framework for the analysis of the data generated by this study.

Research Methods

Six professors volunteered to undertake training sessions to prepare for teaching in the fully synchronous, e-learning environment. All of the sessions were presented by the teaching and learning centre of the university. The sessions were recorded in Adobe Connect so that participants were able to review them later. From the outset, the designers of the training identified themselves as researchers. They advised the professors that on the conclusion of the training, they would be invited to be participants in a research study. The participants consisted of two full-time teaching associates, two adjunct professors, one tenure-track professor and one tenured professor. There were no participants who were seeking tenure or promotion in the foreseeable future; the risk to the participants was not absent, but it was minimal. Because all of the professors agreed to participate in the research study, the research team was able to utilize the recordings of the training sessions as data. These sessions were transcribed, and the transcription itself had a degree of additional complexity because it captured multiple, simultaneous events: the discussion; the back channel (or text chat); and the on-screen authoring and sharing of documents, web-links and presentations.

All of the training sessions were completed before the professors embarked on teaching their first fully synchronous, e-learning course(s); some within weeks of training, and others more than six months later. Some professors taught only graduate courses in the new fully synchronous environment, while others taught both graduate and undergraduate courses. The researchers decided after one year to contact the professors again and invite them to participate in a reflective focus group discussion. Following the focus group, some of the participants suggested that they would like to participate in individual interviews. Subsequently, all of the participants individually offered retrospective perceptions of how the training had prepared them relative to the challenges they experienced teaching their first fully synchronous, e-learning course(s).

The research questions were as follows:

1. How do professors respond to training for the fully synchronous, e-learning environment?
2. Which elements of the training appear to support this transition?
3. How can the effectiveness of this training be measured?

This study lent itself to qualitative research because there was a need

for description to accommodate the individual nature of the journeys of the participants. Each professor presented a different profile in terms of her/his experience with graduate teaching, undergraduate teaching, and/or online learning. The study took place within the natural setting; the synchronous, e-learning target environment for the future courses was also the environment for the training and the data collection.

Qualitative research methods also supported the unique roles of the researchers in this study. As Lichtman (2012) states, “[Q]ualitative researchers involve themselves in every aspect of their work” (p. 163). The authors in this study were also the designers of the training for the professors’ transitions to synchronous, e-learning and, as designers; they had prepared the learning experiences for the training sessions. As researchers, they reflected on the scripts and maintained observation notes on the training sessions. Lichtman refers to this technique as “reflexivity” (p. 163), where the researcher both shapes the research and is, in turn, shaped by the research. The roles of the researchers/trainers in some ways resembled the roles that the professors would assume in their new courses. As trainers, they attempted to model the correct responses to student-initiated actions in the fully synchronous environment (such as how to respond when students moved the screen when hosting or changed the topic of the chat). One of the researchers (who was not in the participants’ faculty) was the key point of contact. She conducted the focus group discussion and the individual interviews, maintaining strict confidentiality, and masking the participants’ responses in the data (through reversing personal pronouns and changing all course-specific references).

Data collected included the recordings and transcripts of the sessions, the trainers’ notes, and the transcripts from the interviews with each professor after they had taught at least one course. The data analysis initially utilized very rudimentary coding schemes which emerged from the data (Glesne, 2006). This was done to try to make sense of the data and become more familiar with it. The research team worked separately for this phase using blind review. As a second step, the researchers met and compared findings. The data were reviewed again, using a more structured analysis, which was contextualized using an analysis framework from the literature (Woolcott, 1994b cited in Creswell, 2013). The key constructs for this review framework included: 1) technology ability, affordances and constraints; 2) transformations such as professors’ reports of changes required by the new fully synchronous environment; and evidence of how the technology was transforming teaching and learning. The findings that resulted from this analysis are reported next, using the categories that were suggested by the review of the literature.

Findings

Abilities, affordances and constraints

The theoretical triad of abilities, affordances and constraints (Kennewell, 2006), was helpful in the qualitative analysis of the data of participants’ responses to participating in the training and then teaching in the fully synchronous, e-learning environment. Professors felt that the fully synchronous e-learning environment offered the affordance of teaching international students in their countries of origin for the first time and in real time. One professor articulates this affordance but also talks about the

constraints of new technology in this comment:

> If you were talking to someone that was new [about] what were some of the advantages that you liked the most about teaching in the online environment, I think the sense of how we are all home together, and all over the place – it's really exciting…they are all in different circumstances and different locations, different contacts. ..I just enjoy being the pioneer…I imagine when the recipe gets better it will be easier for students to have their audio working and their cameras working, so I guess just the fact that we are pioneers in technology, that's what I have to remind myself of frequently.

All but one of the professors, however, reported that they felt pressure because of the precarious nature of the technology. In the debrief session, some reflected on the need for workarounds to be established prior to the start of the online sessions. Professors needed, for example, to plan additional time at the commencement of the class for students to work through equipment checks. Students needed to know where to go to look for information if the live system was disrupted by events such as network difficulties. The professors recognized that the course outline also needed to include more specifics about the fully synchronous environment in advance of the students' actual participation in it. An example of this was the need to stipulate clearly that students required computers with relatively current operating systems; headsets and microphones to manage the feedback; and sufficient bandwidth to allow all of the students to participate with video.

A related finding was the need for professors to model a disposition of acceptance around the constraints. Some of the professors realized that they also needed to model being prepared ahead of class and running through the audio setup. They also articulated that one should not expect the technology to perform flawlessly given all of the variables (such as multiple users and multiple platforms operating simultaneously).

A second finding about affordances was that, while the training offered the opportunity for all of the professors to learn together, the public online classroom for the training was a constraint to some professors' learning. A need for privacy while working through the new learning environment was expressed by multiple participants in different ways. While the trainers thought that this need could be met through recording the sessions for later playback and the offering of a synchronous, e-learning practice room, the professors wanted a more personal space for learning, as well as more individual support. Two of the professors suggested that there should be an informal mentoring system, matching professors who were novices to the fully synchronous environment with more experienced professors. Two of the professors suggested that there was a need for more community learning. One instructor asked for a mentoring system with just 2 or 3 people in the cluster, explaining who would be considered "support" in this way:

> Calling upon people that had already run a course through Adobe Connect within [name of faculty] …to say, "OK. How did you do this? "How did you avoid that? What happens when things shut down?" - all those kind of things. As well as people that were using Adobe Connect for the first time, within again [our] faculty. So it

> wasn't the people that were experienced, it was also those who were just groping along like I was, not so much to commiserate because that has a negative tone, but rather what worked well and what didn't work well and what were some of the little things that you used to make things go smoothly within this kind of environment.

In addition, multiple professors expressed a need for real-time technology support while they taught their first few classes. In many ways, the problems that were articulated by the professors were issues that have been identified in the past: worries about connectivity and reliability.

There were also findings realized from the analysis of the transcripts of the recorded training sessions. The training was designed to focus on the tools of the new online environment and how to operate the program, but instead the participants, through the chat box, moved the training focus from how to use the technology, to trying to understand the background and experiences of their future students. In fact, the trainers realized, when reviewing the data, that the focus of the training sessions, as designed, was rarely the focus of the actual training.

The professors in this study recognized that they needed to build a stronger understanding of technology in order to design their lessons in an optimal way to maximize future student participation. With respect to second-order changes (personal and pedagogical), there was an expressed fear factor. The issues with the technology were real, present, and personal. The participants preferred to work alone to practice these skills, rather than in the group. Also, their needs exceeded what was designed into the training sessions for support. One professor participant explains his development of skills for the new environment this way:

> It's kind of an emergent skill actually. As I master the basic level thing… [I need] a place that I can go back to whether it's the learning modules, or a twitter group or a technician, a place that I can go back to as I get certain things mastered and want to go on to more complex tasks – it's having the support that moves along with you.. movement toward a community of that nature.

They asked, in addition, for demonstrations of how to use the new technology skills specifically for student learning purposes. In summary, they expressed a need for a combination of supports as they built their abilities and worked within the affordances and constraints.

Transformative pedagogy

One of the findings of this study was that a learning design framework was needed for the training that recognized the prior learning and experience of the professors and engaged them in conversations of what was different and what could be adapted from previous teaching and learning models. One of the participants, for example, reported that he had received the resources to teach the course from the person who had been teaching it face-to-face for the last five years. The course required significant change to make it work in the online format, beyond just having students submit assignments online, rather than physically. One professor mentioned that the synchronous, e-learning environment allowed students

to co-construct concept maps to represent their thinking while another mentioned learning activities such as shared viewing of short, online videos followed by synchronous conversation. Still another summarized that you need to keep some teaching and learning strategies from the previous environment and change others. He explains:

> Teachers need to realize that it's a different mode of teaching, engaging your students and what you did in the classroom [in the past] will not necessarily work well in this medium. That you do need to recognize and modify some of your approaches in order to engage your students. And secondly, it is an issue of patience… We just need to give them that extra moment, ten extra seconds to click on their microphone or gather their thoughts to come back and give their response. So using wait time as we normally do in a face-to-face, I think, does apply even more in this particular medium.

Most of them indicated that they felt sufficiently skilled with teaching adults, either through in-person graduate courses or through other teaching in tertiary education. The professors expressed, as they reflected critically on the training, that it would have been helpful to begin with pedagogies that they understood well (such as collaboration and group work) and show them how to undertake these strategies in the new setting of fully synchronous classes; rather than introduce them first to the tools and then discuss how they might be used.

Discussion of the Findings

The findings from this study both confirm earlier findings and suggest possible ways forward. Perhaps not surprisingly, the transition to the fully synchronous environment was considered by all of the professors to be a change of some significance, and coined by one professor as "nosebleed" swift in the pace of the changes required. Theories of transitions with technology from earlier decades were confirmed in the participants' responses. For example, there were multiple examples given by the participants of first- and second-order changes (Ertmer, 1999) in dealing with the technology and the tools; as well as overcoming fear and finding comfort levels. There were, as well, numerous references in the data to the need for different environments in which to process the changes and to practice. These findings aligned with early work on learning spaces in which Thornburg (1996) theorizes that those new to online educational technology need different spaces for different types of learning. The campfire is used for whole group learning; the watering-hole for peer-to-peer learning; and the cave for solitary practice and reflection – all of which are employed in one's life (Thornburg, 1996).

The learning of the professors in this study might have been further enhanced by explicit teaching of more current theories of e-learning. For example, Anderson (2008) theorizes that online learning is learner centered, knowledge centered, assessment centered, and community centered. The training might have been enhanced through discussions about trust and safety in an online learning community; the affordances of the web; and synchronous and asynchronous, e-learning. For example, Hughes' (2005) framework of learning with technology as substitution, amplification, or transformation might have helped professors to select the most appropriate learning activities.

Finally, after reviewing the data, as trainers, we have reflected that it would have been helpful to introduce some aspects of how technology offers the potential for transformative pedagogy, where the role of the teachers and students can change (Bruns et al., 2007; Cranton, 2010; Keegan, 2011). This would have helped professors to name some of the events they were experiencing and connect them to their practice. For example, one professor commented, “I think as a teacher, I’ve learned a lot just by participating…I have felt many times in my [new] course like I was a student all over again.”

The professors reminded us through their comments that their first connection was to their students, not to the new tools. It might have helped to be more explicit about how each tool in the synchronous, e-learning environment was to be applied to classroom practice, rather than working with the professors first with the tools within the new platform. Macdonald and Poniatowska (2011) state, “There is clearly much mileage therefore in concentrating first on the jobs that teachers need to be able to do, rather than starting with tool functionality” (p. 124). One of our professors articulated, however, that a dual approach can also work. She explained how she would first investigate the functionality and then integrate it with her previous knowledge about teaching in this way:

> Make sure that you know the features within the platform. That will show you what you can do. It will set the parameters. So if you saw for example that there were breakout rooms, it kind of shows you that you can still do small group work. It shows you that polling feature, you can get everyone to participate. So it helps you plan and organize the learning material. So just get super familiar with all the functionality of [the software] so that it can help you in the planning. I mean…if you like to engage your learners, then you need to learn what you have so you can then plan your learning.

In summary then, there were mixed views regarding whether to put the tools first or the student learning activities first, but there was general agreement that the focus would need to be on how the students were learning and responding.

A third consideration that emerged for the researchers from the findings is the professors’ articulation of a need for ongoing supports, through mentorship, technical support or through a community composed of others both those experienced with the technology and other novices. Lafortune (2009) proposes a model of professional development that is socio-constructivist in its overall approach and includes a concept of “accompaniment” or walking beside the person involved in educational change (p.11). Educators making a change are accompanied by persons who have just made the change, and may still be going through the change process themselves. They initiate timely interventions to prompt action over an extended period of time. She suggests that this approach to professional development could be one that helps to build more coherence between theory and practice. This concept of *accompaniment* (Lafortune, 2009) offers, we believe, some potential for future technology-related education transitions.

Conclusion and Recommendations

This study, although small, does provide some interesting findings to share with others who are helping professors to transition to fully synchronous-learning modes. For professors who are already experienced with adult learners, technological pedagogical frameworks can provide a support to theorize this transition into new territory. In retrospect, starting with training on the technology affordances and skills was not seen to be helpful as it was not connected to adult learning. As the professors suggested, one approach to the training could have been to utilize a list of teaching and learning strategies, and then indicate how they could be deployed in the new environment.

A second recommendation would be to utilize the affordances of the technology to provide the training in as many ways and modalities as possible. The trainers wanted the professors to jump in and explore the environment during the training, but the professors gave indications that this was a high-risk situation for them in the larger group. They wanted to move at their own pace and work individually. In this case, screen captures and voice-overs along with text files would have allowed the professors to review the key technology skills and processes in their own time. Combined with access to individual support, these might have been more comfortable training options.

The findings of this study indicate that the learning curve, even for experienced professors, is a key factor to be considered in the transition to the fully synchronous, e-learning environment. There was a strong sense from the professors that they had not anticipated the complexity of the transition to the synchronous, e-learning setting, nor the amount of practice that it would take to build confidence and comfort. They recognized that they were much more comfortable after teaching one course in the new environment. Some of the professors also identified a need for extended and ongoing mentoring throughout the transition process (e.g., Lafortune, 2009), as well as more provisions for differentiated instruction based on their comfort levels with technology (Ertmer,1999).

While we are aware from our review of the literature that technology can lead to and support transformative teaching and learning, there were few reported instances of this transformation reported in our data. This may be because it was too early in the change process for transformative practices to be articulated, or perhaps they were not reported because transformative learning theory (Cranton, 2010) was not included in the training materials. This leaves room for its consideration in future training endeavours. These reflections on the process studied here are offered in the hope that providing a window on this small study will suggest some future considerations to those guiding professors who are venturing into the territory of fully synchronous e-learning and teaching.

References

Anderson, T. (2008) Towards a theory of online learning. In T. Anderson (Ed.) *The theory and practice of online learning* (pp. 45-75).Retrieved from http://www.aupress.ca/books/120146/ebook/99Z_Anderson_2008-Theory_and_Practice_of_Online_Learning.pdf

Borko, H., Whitcomb, J. & Liston, D. (2009). Wicked problems and

other thoughts on issues of technology and teacher learning. *Journal of Teacher Education.* 60 (3).3-7.

Bruns, A., Cobcroft, R., Smith, J. & Towers, S. (2007). Mobile learning technologies and the move towards 'User-led Education.' In Proceedings Mobile Media, Sydney. Accessed 2/09/2012 @ http://eprints.qut.edu.au/6625/1/6625.pdf

Collins, J. & Weiner, S. (2010). Proposal for the creation of a sub discipline: Education informatics. *Teachers College Record*. 112 (10):2523-2536.

Cranton, P. (2010). Transformative learning in an online environment. *International journal of adult vocational education and technology,* 1(2), 1-9, April-June 2010.

Cranton, P. & King, K. (2003).Transformative learning as a professional development goal. *New directions for adult and continuing education*.98 (Summer 2003).31-37.

Creswell, J. (2013). *Qualitative inquiry in research design: Choosing among five approaches*. Sage: Thousand Oaks, CA.

Ertmer, P. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development*. 47(4).47- 61.

Glesne, C. (2006). *Becoming Qualitative Researchers: An Introduction*. Boston: Pearson Education, Inc.

Hrastinski, S., Keller, C., & Carlson, S. (2010). Design exemplars for synchronous e-learning: A design theory approach. *Computers & Education*.55 (2010). 652-662. doi>10.1016/j.compedu.2010.02.025

Hughes, J. (2005). The role of teacher knowledge and learning experience in forming technology-integrated pedagogy. *Journal of Technology and teacher education.* 12(2), 277-302.

Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in Education*. February, 22008 (32).241-267.

Keegan, P. (2011). Transformative e-learning and teaching in mandatory tertiary education. Asian Social Science.7(11). 66-75. doi:10.5539/ass.v7n11p66

Kennewell, S. (2006). Using affordances and constraints to evaluate the use of information and communications technology in teaching and learning. *Journal of Information Technology for Teacher Education.* 10 (1/2).101-116.

King, K. (2002). Educational technology professional development as transformative learning opportunities. *Computers & Education*.39 (2002).283-297.

Lafortune, L. (2009). *Professional competencies for accompanying change: A frame of reference.* Quebec, Canada: Presses de l'Université du

Québec.

Lichtman, M. (2012).*Qualitative research in education: A user's guide*. 3rd ed. Sage: Los Angeles.

Macdonald, J. & Poniatowska, B. (2011). Designing the professional development of staff for teaching online: an OU (UK) case study. *Distance Education*, 32(1), 119-134.

McGreal, R. & Anderson, T. (2007).E-learning in Canada. Journal of distance education technologies, 5 (1), 1-6.

Mezirow, J. (1997). Transformative Learning: Theory to Practice. *New directions for adult and continuing education*. 74 (Summer, 1997).5-12.

Pannekoek, F. (2011).Foreword. In Burge, e., Campbell Gibson, C., & Gibson,T. (2011) (Eds.) *Flexible pedagogy, flexible practice: Notes from the trenches of distance education*. Edmonton, Alberta: AU Press, Athabasca University.

Puentedura, R. (2008). *Transformation, Technology and Education*. Retrieved 1/14/2012 @ http://www.msad54.org/sahs/TechInteg/mlti/SAMR.pdf.

Senn, G. (2008). Comparison of face-to-face and hybrid delivery of a course that requires technology skills development. *Journal of Information Technology Education*.7, 267-283.

Wallace, L. (2007). Online teaching and university policy: Investigating the disconnect. *Journal of distance education*.22 (1).87-100.

Thornburg, D. (1996). *Campfires in cyberspace*. San Carlos, CA: David D. Thornburg and Starsong Publications.

Wallace, L. (2007). Online teaching and university policy: Investigating the disconnect. *Journal of Distance Education*.22 (1).87-100.

Waterhouse, S. & Rogers, R. (2004).The importance of policies in e-learning instruction. *Educause Quarterly.* (3). 28-38.

Woodfine, B., Baptista Nunes, M. & Wright, D. (2008). Text-based synchronous e-learning and dyslexia: Not necessarily the perfect match. *Computers & Education*.50 (2008).703-718.

Wingard, R. (2004). Classroom teaching changes in web-enhanced courses: A multi-institutional

Study. *Educause Quarterly*. 1 (2004).26-35.

Lorayne Robertson is the Graduate Program Director in Education and an Assistant Professor at the University of Ontario Institute of Technology. Her research interests include transformative aspects of teaching and learning with digital technologies, and policy analysis, specifically in the areas of critical media literacy and preservice education. She may be contacted at Lorayne.Robertson@uoit.ca

Wendy Hardman is an Adjunct Professor for Faculty of Health Sciences at the University of Ontario Institute of Technology. Her research focuses on online training design and how to implement it successfully in workplace settings. Her other research interests include gender issues related to learning and factors that influence successful training.

Contents
